

**Exemption No. 6164**

**UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98055-4056**

In the matter of the petition of  <b>Learjet, Inc.</b>  for an exemption from §§ 25.832 of the Federal Aviation Regulations	<b>Regulatory Docket No. 27992</b>
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**DENIAL OF PETITION**

By letter L706-11-94-799 dated November 30, 1994, Mr. William W. Greer, Vice President of Engineering, Learjet Inc., One Learjet Way, Wichita, Kansas 67209-2942, petitioned for an exemption from the ozone concentration requirements of § 25.832 of the Federal Aviation Regulations (FAR) for Model 45 airplanes.

Mr. Greer states in his letter that because the Model 45 operation is typically conducted carrying company employees, operating exempt from the ozone concentration regulation would be no more unsafe than operation under part 121. Additionally, the Model 45 aircraft is targeted for operations under parts 91 and 135, neither of which have requirements for ozone concentration. Furthermore, there has not been one recorded complaint of ozone sickness in the 7,000,000 plus flight hour history of the Learjet operations, and the addition of ozone control devices would impose a cost and weight penalty with no corresponding safety benefit. Consequently, Learjet Inc. requests the Model 45 aircraft be exempt from the requirements of § 25.832.

**Section of the FAR affected:**

Section 25.832 contains standards concerning the maximum levels of cabin ozone concentration for type certification of transport category airplanes. Section 25.832 applies to all transport category airplanes for which application for type certification was made on or after February 20, 1980, regardless of their intended use.

ANM-95-005-E

**Related Section of the FAR:**

Section 121.578 of part 121 contains standards concerning the maximum levels of ozone concentration in the cabins of transport category airplanes used in air carrier or commercial operations. The requirements of § 121.578 are applicable to all transport category airplanes, regardless of whether compliance with § 25.832 is required as part of the type certification basis. One of the stated exceptions is that compliance with these standards need not be demonstrated when the only persons carried are flight crewmembers and other non-revenue occupants listed in § 121.583.

**The petitioner's supportive information is as follows:****A. Ozone Exposure**

The petitioner states the effects of ozone are a function of ozone concentration and time of exposure. He notes that ozone concentrations vary considerably with the altitude, latitude and season of the year and are therefore governed by the specific operation of the airplane. Although the Model 45 is intended for operation at 51,000 ft., at which altitude ozone concentrations are moderate, the exposure time which is directly related to flight length is relatively low as compared to commercial jets traveling international routes. Repeated exposure in terms of frequency is a function of operation and in the case of a business jet is much lower than that seen in commercial airline operations. Some of the larger commercial airplanes have provisions for an ozone removal device, but the responsibility of ozone level control is left to the operator, the requirements of which are defined in § 121.578. This requirement clearly imposes the ozone levels in relation to the general public and specifically exempts crew and company employees.

**B. Service History**

The petitioner maintains there has not been one recorded complaint of ozone sickness in the history of Learjet operations which began in 1965. He states "Learjet Country" is a well known expression and was coined because typical Learjet flights were at altitudes above all other airplanes. It was accentuated when the maximum allowable operating altitude was extended from the original 41,000 ft. to 45,000 ft. and then 51,000 ft. The petitioner states that with a fleet time of over 7,000,000 flight hours operating at typical Learjet altitudes and flight times with no complaints of ozone sickness, an excellent service history has been established.

**C. Intended Operation of the Learjet Model 45 Airplane**

The petitioner notes the only operating cabin ozone concentration rule, § 121.578(e), states that if only crewmembers and persons listed in § 121.583 (company employees) are carried, then § 121.578(b) need not be complied with. Thus the ozone rule is designed to protect the general

public. This is also evidenced by the lack of operating rules related to ozone for parts 91 and 135 operators. There are no Learjets operating under part 121, and more specifically the Model 45 is not intended for operation under part 121. As for number of occupants, some commercial airplanes operating under part 121 when exempt from the ozone requirement (by virtue of § 121.578(e)), carry more crewmembers than the maximum number of occupants of the Model 45 (12). Furthermore all occupants of the Model 45 would most likely be company employees.

#### **D. Maximum Potential Flight Time above Flight Level 270**

The maximum potential time above flight level 270 is not significant when consideration is given to the history of actual service usage of Learjets. The average flight time of Learjets is only 1.1 hours. The Model 45 average flight time is not expected to be any greater.

#### **E. Weight and Cost Penalty**

It is Learjet's position that the addition of filters or other specialized ozone control devices would impose a weight and cost penalty without any corresponding safety benefit.

#### **F. Inconsistencies in Part 25**

The petitioner believes that in view of the way the operating rules are written, i.e., part 121 having cabin ozone concentration requirements while parts 91 and 135 do not, it would appear that § 25.832 should be tied to the operating rule as other equipment requirements in part 25 are. For example, ditching certification, the requirements for which are addressed in § 25.801 is an option for the manufacturer, but is required for airplanes operating under § 121.161 in extended overwater operation. Since the only operating rule which requires adherence to cabin ozone concentration levels is part 121, and flights with only crewmembers or company employees (and others specified) can be exempted from the requirements, it seems that the requirement for the equipment to maintain the cabin ozone concentrations within certain levels would only apply if the operating rules require such equipment. It is therefore, not reasonable to limit the Model 45 business jet to a maximum operating altitude of 32,000 ft. to comply with § 25.832.

A summary of Learjet's petition was published in the Federal Register on January 13, 1995 (60 FR 3289). No comments were received.

#### **The FAA's analysis/summary is as follows:**

The FAA has carefully considered the information provided by the petitioner, as well as other relevant information, and has determined that there is insufficient merit to warrant granting this petition. The FAA's specific responses to the above petitioner's supportive information follows:

### **A. Ozone Exposure**

The FAA does not concur. Report No. FAA-AM-80-16 states, in part, that ozone concentration is more important than duration of exposure in determining the effectiveness of an ozone exposure (dose). This is interpreted to mean that peak concentrations are more important than the duration of exposure in assessing ozone induced symptoms. Although the Learjet Model 45 may be intended for operation in which the frequency and length of exposure is relatively low, there is nothing to prevent the airplane from being operated in a high exposure environment by the operators. For those flights that might encounter elevated ozone levels, the public benefit of ozone avoidance outweighs the burden imposed on the operator.

### **B. Service History**

The FAA acknowledges that Learjet may not have received complaints of ozone sickness in over 7,000,000 hours of flight. However there is not necessarily any relationship between the incidence of "recorded" complaints of ozone sickness and actual occurrences of ozone sickness since there is not any requirement for the operators to report this to Learjet. Furthermore, the symptoms may not have been properly identified as ozone-related.

### **C. Intended Operation of the Learjet Model 45 Airplane**

The FAA acknowledges the Learjet model 45 may be intended for operation in which the frequency and length of exposure is relatively low. However, there is nothing to prevent the airplane from being operated in a high exposure environment by the operators, or from carrying non-company personnel. For those flights with non-company personnel that might encounter elevated ozone levels, the public benefit of ozone avoidance outweighs the burden imposed on the operator.

### **D. Maximum Potential Flight Time above Flight Level 270**

See response to item A.

### **E. Weight and Cost Penalty**

Coughing, restriction of airflow in the bronchioles, sore throat, bleeding nose, chest pain, fatigue, itching eyes, shortness of breath, etc. are commonly cited physical results of ozone contamination and exposure. The FAA has estimated that the filter and installation cost will range from \$4,500 to \$8,350 per converter, with each aircraft requiring from two to three converters. For those flights with non-company personnel that might encounter elevated ozone levels, the public benefit of ozone avoidance outweighs the burden imposed on the operator.

## **F. Inconsistencies in Part 25**

Part 25 generally applies to all new transport category airplanes for which application for type certification is filed after the effective date of the part 25 rule, regardless of what part they are operated under. Including these requirements in the operating rules effectively makes these requirements retroactive for those aircraft to which the operating rules apply. The determination, at the time of issuance, that a new design standard should be made retroactive for some operators is based on a cost-benefit analysis showing that the rule will be cost-effective for those operators. The fact that it is not made retroactive for all operators simply means that the increase in safety could not be shown to be cost-effective for all operators to comply retroactively. This effectively creates a "grandfather" provision for those operators.

The cost-benefit analysis is completely different for new designs for which application for type certification is filed after the effective date of the part 25 rule. In performing the cost-benefit analysis for the part 25 rule, the FAA determined that it would be cost-effective for all designs to which it was made applicable (i.e., all transports). There is no valid basis for distinguishing the Learjet Model 45 design from other transports for purposes of this rule. Therefore, the FAA does not agree that § 25.832 should be tied to the operating rule, or that this is sufficient basis for a Learjet Model 45 exemption.

In consideration of the foregoing, I find that a grant of exemption is not in the public interest. Therefore, pursuant to the authority contained in §§ 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), the petition of Learjet Model 45 for exemption from the ozone concentration requirements of § 25.832 of the Federal Aviation Regulations is hereby denied.

Issued in Renton, Washington, on

Darrell M. Pederson  
Acting Manager  
Transport Airplane Directorate  
Aircraft Certification Service